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A NEW SPECIES OF *TROPIDURUS* (SAURIA,
 IGUANIDAE) FROM THE ARID CHACOAN AND
 WESTERN REGIONS OF ARGENTINA

by
 JOSÉ M. CEI¹

The South American iguanid lizards of the genus *Tropidurus* form a widely ranging and diverse group of species, with representatives on both sides of the Andes. Those species that occur mainly or entirely to the west of the Andes seem to fall into two distinct species groups. The *peruvianus* group (*peruvianus*, *tigris*, *thoracicus*, *theresia*, *theresoides*, *tarapacensis*) is characterized by small, juxtaposed body scales (116-165 around midbody) and an inconspicuous, often discontinuous row of vertebral scales; the *occipitalis* group (*occipitalis*, *koepckeorum*, *stolzmanni*) is characterized by large, keeled, imbricate body scales (48-106 at midbody) and a continuous row of enlarged vertebral scales (Mertens, 1956; Donoso Barros, 1966; Dixon and Wright, 1975). The Galapagoan species are all similar to *occipitalis* and may be included in that group. East of the Andes this dichotomy appears to be represented by *T. melanopleurus* and *T. spinulosus*. *Tropidurus melanopleurus* occurs along the eastern slopes of the Andes from extreme southeastern Perú through Bolivia to extreme northwestern Argentina, and resembles the *peruvianus* group by having minute body scales (160-222 around midbody) and an inconspicuous and sometimes discontinuous vertebral scale row. *Tropidurus spinulosus* occurs at higher latitudes along the eastern Andean slopes, but extends eastward into the arid lowlands of Bolivia, western Mato Grosso, and western Paraguay; it resembles the *occipitalis* group by having

¹ Departamento Ciencias Naturales, Universidad Nacional de Río Cuarto, Prov. de Córdoba, Argentina. Personal address: Rancho Somuncurá, Rua Fausto de Figueiredo, Birre-2750, Caseais, Portugal.

large, imbricate, keeled body scales (83–101 around midbody) and a conspicuous vertebral scale row.

The remaining eastern species vary widely in body scale size, but differ from both the *peruvianus* and *occipitalis* groups in lacking a vertebral scale row. Although the taxonomic relationships of these eastern taxa are not clear, they may be referred to as the *torquatus* group. This group occupies an enormous range, from northeastern Colombia through Venezuela and the Guianas, southward in eastern Brasil to the Paraná Basin, and westward into Argentina and Bolivia. Four species of the *torquatus* group were recognized by Etheridge (*in* Peters and Donoso-Barros 1970)—*torquatus*, *hispidus*, *hygomi*, and *bogerti*. However, more recent studies by Trefaut Rodrigues of the Zoological Museum of São Paulo (Vanzolini: pers. comm.) indicate that several additional taxa may be recognized in the eastern and northern parts of the range.

In the southwestern part of the range of the *torquatus* group, in the arid Chacoan and western areas of Argentina, populations of this group have been referred to as *Tropidurus hispidus* (Boulenger, 1902; Peracca, 1985, 1904), or as *T. torquatus hispidus* (Burt and Burt, 1931; Hellmich, 1960; Hoogmoed, 1973). Burt and Burt (1931) considered these southwestern populations to represent intermediates between *torquatus* and *hispidus*, thereby justifying the recognition of *hispidus* as a subspecies of *torquatus*. Most subsequent authors have followed this arrangement. However, careful study has revealed that these southwestern populations represent an undescribed species of *Tropidurus* distinct from both the neighboring population of the *torquatus* group to the east, and the populations usually referred to *hispidus* far to the north. The new species is named for Dr. Richard E. Etheridge in recognition of his careful and substantial contribution to this paper.

Tropidurus etheridgei new species

FIGURE 1

Holotype.—The University of Kansas Museum of Natural History (KU) 186101, an adult male from Mina Claveros, 1200 m, northeastern slopes of the Sierras de Córdoba, Provincia de Córdoba, Argentina (31°45'S; 65°5'W), collected on 3 January 1980 by José M. Cei.

Paratypes.—KU 186102–186108, 7 adult males, KU 186109–186115, 5 adult and 2 immature females, collected with the holotype.

Diagnosis.—*Tropidurus etheridgei* is distinguished from other members of the genus, except those of the *torquatus* group, in lacking a vertebral (middorsal) scale row. It differs from the neighboring eastern populations of the *torquatus* group in having: 1) dorsal

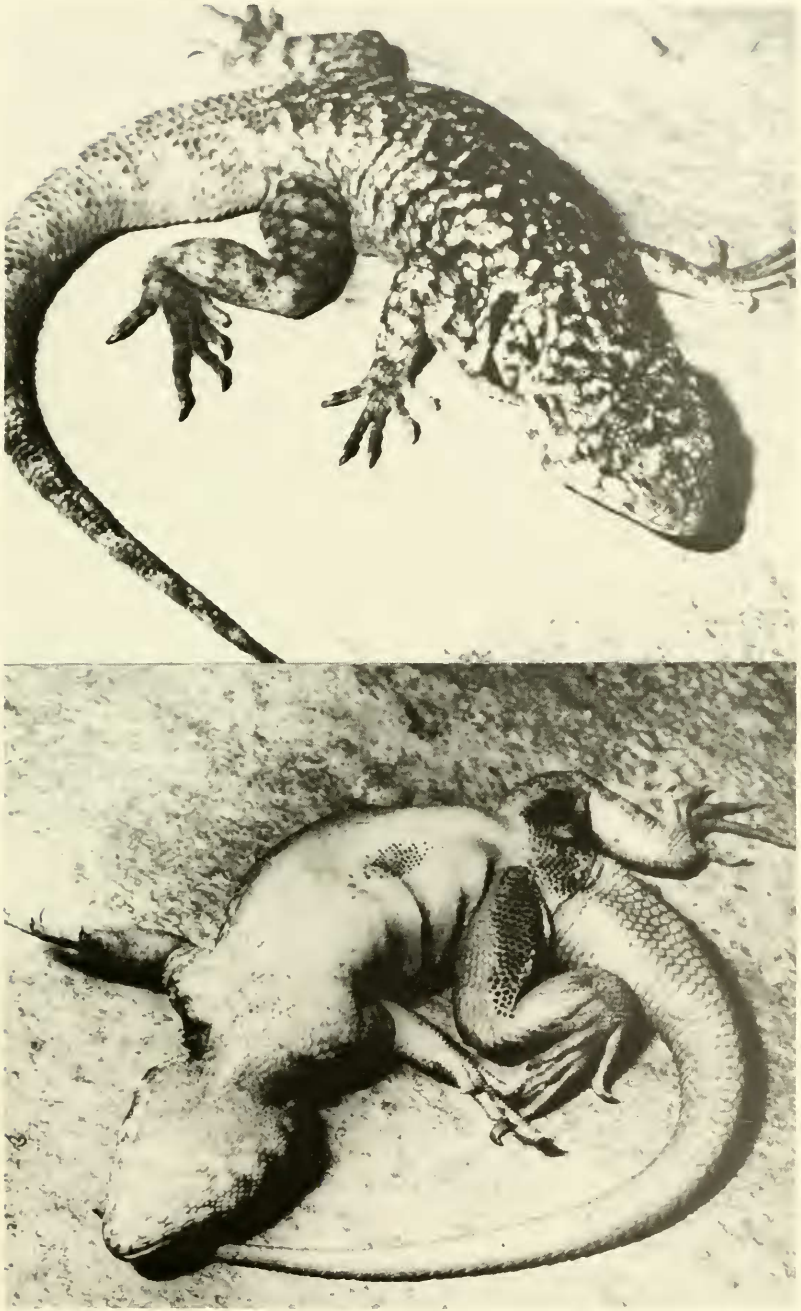


FIG. 1.—Dorsal (upper) and ventral (lower) views of the holotype of *Tropidurus etheridgei*, an adult male (KU 186101), total length 251 mm.

scales distinctly larger, 2) body more robust and tail more spinous, 3) canthus rostralis more evident and more concave, 4) cephalic scales more prominent and rugose, 5) few large acuminate scales on anterior margin of ear opening, 6) infralabials almost acuminate, and supralabials narrower and more prominent, 7) scales on the throat more spinous, 8) axillary and inguinal dermal pockets absent, and 9) ventral scales with evident melanophores in males. Compared with *T. torquatus*, it differs in having a larger and stouter body, distinctly larger dorsal scales, two nuchal pockets (one in *torquatus*), and different coloration. Compared with the northernmost Brazilian populations, it differs in having two nuchal pockets, supralabials, fewer large acuminate scales on the anterior margin of slightly smaller dorsal scales, more scale rows between subocular and ear opening, more acuminate narrow supralabials and infralabials, ventral scales with distinct melanophores in males and different dorsal coloration. It is easily distinguished from *T. hygomi*, in having a much larger body size, different coloration, and lacking the broad, strap-like supraoculars of the latter. The rare *T. bogerti* from the Auyantepui massif (2500 m, Estado de Bolívar, Venezuela) is said to have tufts of spiny scales on the neck, as in *Plica*.

Description.—Head length less than one fourth body length. Well developed antehumeral and lateral neck folds; two nuchal pockets, but no axillary or inguinal pockets. Snout slightly pointed; nostral scale large, wide, twice as wide as high; nasal in contact with rostral; nostril much smaller than nasal scale, opening anterodorsally, nearer to tip of snout than to eye; ear opening elliptical, edged anteriorly by four or five large, acuminate scales, posteriorly by small, spinous scales; temporal scales irregular, weakly keeled and slightly acuminate; scales of frontal, parietal and occipital regions irregularly shaped, large and convex; occipital shield enlarged, rounded, widest posteriorly behind; eight enlarged supraoculars, larger than scales of interorbital region, separated from superciliaries by two or three rows of smaller, irregular scales. Subocular scale large, undivided, separated from supralabials by two or three depressed rows of small scales; supralabials 6; infralabials 5, with prominent medial longitudinal ridge; mental polygonal; eyelid slightly fringed; scales on side of neck small, spinous, acuminate, mucronate, strikingly smaller than imbricate, keeled, scales on dorsum of neck; scales across gular region between tympana 47–48. Vertebral scale row absent; dorsal scales lozenge-shaped, regularly arranged, imbricate, distinctly keeled, mucronate, larger than ventral scales; scales on sides smaller, imbricate; ventral scales quadrangular, smooth, increasing in size and irregular in gular region; upper caudal scales faintly keeled anteriorly, distinctly keeled posteriorly, spinous and mucronate; ventral caudal scales subtriangular, smooth, keeled posteriorly; scales around middle of body 80–82.

Scales on dorsal surface of forelimb strongly keeled, imbricate; ventral forelimb scales smaller, triangular, smooth; dorsal thigh scales enlarged, faintly keeled, mucronate, imbricate; ventral thigh scales about same size, smooth; dorsal shank scales large, strongly keeled, mucronate; ventral shank scales large, strongly keeled, mucronate; ventral shank scales slightly smaller, smooth; enlarged scales of preanal region subtriangular; subdigital lamellae of fourth finger 23, on fourth toe 26, all tricarinate; claws of all digits short, strong, curved, 2 mm long. Hind limb and forelimb stout; when forelimb adpressed, fourth finger barely reaching groin; when hind limb adpressed, fourth toe crossing axilla.

Coloration: Dorsum brownish gray, with irregular transverse dark markings with pale borders posteriorly; dorsum of tail pale brown with obscure transverse brown markings; head darker brown; black bar laterally on antehumeral region; throat white, mottled with dark gray; venter white with large pigmented black areas on femoral-cloacal region and belly. Females colored like males, except paler and without black areas ventrally.

Measurements and variation of holotype and paratypes: Snout-vent length in adult males 81–109 mm, in adult females 83–103 mm (Table 1). Males differ from females by having significantly larger forelimbs and hind limbs and fewer scales around midbody (79–84 versus 88–94). However, insignificant sexual differences in number of scales around midbody were noted in some Bolivian populations (Etheridge, pers. comm.). Subdigital lamellae 19–21 on fourth finger, 24–27 on fifth toe, sexes combined. No notable individual or

TABLE 1. Measurements of holotype and paratypes of *Tropidurus etheridgei* (mm)

KU Number		Total Length	Snout vent	Head Length	Head Width	Fore-limb	Hind limb	Axilla groin
186101	Holotype ♂	251	109	24	22	46	74	49
186102	♂	212	92	21.5	19	40	64	41
186103	♂	— ^o	92	20	18	38	62.5	41
186104	♂	—	86	21	17.5	39.5	59	40
186105	♂	—	92	21.2	18.5	39	61	40.2
186106	♂	191	81	20	16.5	38	56	35.5
186107	♂	200	86	20.2	16.5	40	62	37.2
186108	♂	—	89	21	18.5	40	60	41
186109	♀	—	103	21.5	20	39	57	54
186110	♀	212	97	21	17.2	40	60.5	42.5
186111	♀	—	95	20	17	42	59	47
186112	♀	—	93	20	18	37	58	44.5
186113	♀	170	83	17.2	14	35	50	37.2
186114	♀	—	75	16.2	14	32	48	34
186115	♀	—	75	17	15	30	—	39

^o—Regenerated tail.

population variation in lepidosis or coloration was observed throughout the range of *T. etheridgei* in Argentina.

Distribution.—The lower sub-Andean slopes of eastern Bolivia from Trinidad southward into Argentina and eastward to Urucum and Corumbá in western Mato Grosso, Brasil; southward in Argentina to the Sierras de San Luis (33° S) and eastward into the western parts of Chaco, Santiago del Estero and Córdoba provinces (Fig. 2).

Remarks.—*Tropidurus etheridgei* is found mostly in arid rocky environments, with spiny bushes or Chacoan vegetation. It is an inhabitant of deep crevices and ravines; however, it climbs on trees to forage. I have observed its arboreal tendencies on xerophilous scrubs in Santiago del Estero and Chaco, Argentina. This lizard is a timid, oviparous iguanid, strongly autotomic, and feeds preferentially on arthropods. At many localities in its range, it is sympatric with, and similar ecologically to *T. spinulosus*.

DISCUSSION

The *Tropidurus torquatus* group covers a vast area of South America east of the Andes and north of about 33° S latitude. Prior to the work of Burt and Burt (1930) it had long been believed that there were two widespread species—*Tropidurus hispidus* (Spix, 1825) with large body scales (54–94 around midbody) in northern and northeastern South America, and a small-scaled species (90–140 around midbody), *T. torquatus* (Wied, 1820), in eastern and southern Brasil. A third species, *T. hygomi* Reinhardt and Lutken 1861, in eastern Brasil, was also recognized. Its body scales (75–94 around midbody) are slightly larger than those of *T. hispidus*, but it was distinguished by its broad band-like supraoculars.

At the time of Burt and Burt's study (1930), the range of the *torquatus* group was imprecisely known. They observed that specimens from the southwestern part of the range had body scale counts intermediate between those of *T. hispidus* and *T. torquatus*; they concluded that these specimens were intermediate between the nominal species and reduced *T. hispidus* to subspecific status. Although not precisely stated, it was probably their assumption that the range of *T. hispidus* extended southward through the Amazon Basin and into the Chaco and western Argentina, where it intergraded with *torquatus*, ranging to the east in eastern Argentina, Paraguay and southern Brasil. Subsequently most authors (e.g. Hellmich 1960; Hoogmoed 1963) accepted this analysis. Burt and Burt (1930) also placed *T. hygomi* in the synonymy of *T. hispidus*. However, Hellmich (1960), Etheridge in Peters and Donoso-Barros (1970) and Vanzolini and Gomes (1979), after examining the types and sympatric samples of *T. torquatus* from the type locality of *T. hygomi* considered it to be a valid species.

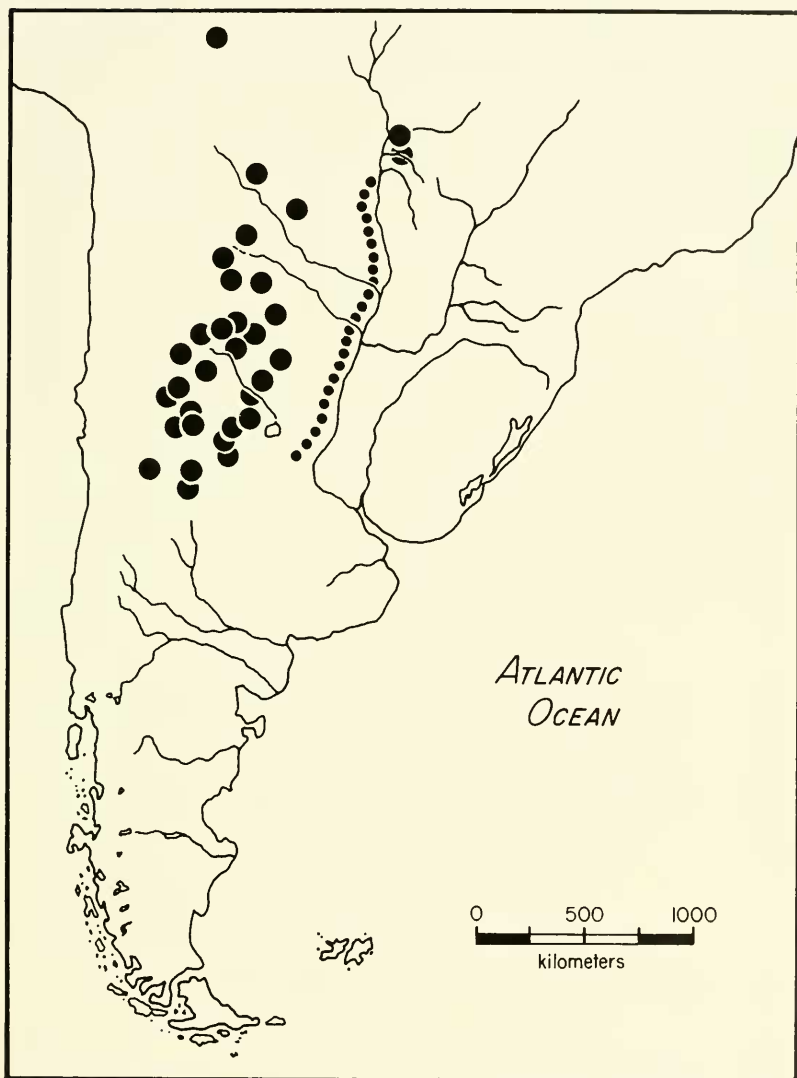


FIG. 2.—Known localities of *Tropidurus etheridgei*. Dotted line is the tentative eastern boundary of the Chacoan region, along the Paraná Basin (littoral transition zone).

The present work and unpublished studies of Etheridge and Trefaut Rodrigues show that the *torquatus* group is taxonomically far more complex than earlier literature indicates. The small-scaled

populations in northeastern Argentina, Paraguay and southern and eastern Brasil, formerly all included under the name *torquatus*, now appear to involve more than one taxon—*torquatus*, restricted to the eastern coast of Brasil north of Rio de Janeiro, and an unnamed taxon in the Paraná Basin and inland to Paraguay, eastern Bolivia, and Misiones in northern Argentina. There it approaches the eastern range of *T. etheridgei*. In northern Brasil there is perhaps another unnamed taxon (Vanzolini, pers. comm.). *Tropidurus hygomi* is restricted to a small region of the coast in Sergipe and adjacent extreme eastern Bahia, Brasil. The widespread large-scaled populations in Venezuela, the Guianas, and northern Brasil, presently referred to *T. hispidus*, also may represent more than one species.

Burt and Burt (1931) considered the lizards described here as *T. etheridgei* as intermediate between *T. torquatus* and *hispidus*, thus justifying recognition of these taxa as subspecies. However, the large-scaled populations that I refer to *T. hispidus* are far to the north, and *T. etheridgei* is geographically close only to an unnamed taxon that ranges to the east in the Paraná Basin.

The recognition of a new species of *Tropidurus* from the enormous Chacoan region is not unexpected. Since Tertiary times, the ecologically differentiated xeric ecosystems of the Chaco have affected speciation of reptiles and amphibians, giving rise to specialized xerophilous western taxa of lizards, such as *Teius cyanogaster*, *Tupinambis rufescens*, *Cnemidophorus longicaudus*, and *Proctotretus doellojuradoi* (Cei, 1981). Their general patterns of distribution are like that of *Tropidurus etheridgei*. Probably its speciation occurred during some glacial phase of increasing dryness in the Pleistocene. However, only nonmorphological research, such as the determination of immunological distances, can provide approximate information about the time of divergence of *T. etheridgei* from its counterpart living along the Río Paraná and in eastern Brasil.

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RESUMEN

Se describe una nueva especie del grupo *torquatus* del genero *Tropidurus*—*T. etheridgei* de la región chaqueña, distribuida entre los 33° y 19° de latitud sur, y desde las laderas orientales andinas y los bordes del Paraná, en Paraguay y Corrientes. Esta nueva especie es característica de la amplia cuenca continental de génesis y especiación del dominio chaqueño, y como en el caso de otros elementos herpetofaunísticos de la misma area, ha llegado probablemente a diferenciarse en los periodos mas aridos del Pleistoceno. Se reconoce de las poblaciones limítrofes de la cuenca paranense por una significativa combinación de caracteres, entre estos la ausencia de cavidades o “bolsillos” cutáneos axilares e inguinales, diferencias en la lepidosis cefálica y el mayor tamaño de las escamas (79–84 alrededor del cuerpo en los machos, 88–94 en las hembras, contra 90–116 y 101–128, respectivamente, en las poblaciones al este del Paraná). Se hace un resumen del presente estado taxonómico del grupo, actualmente en revisión y aparentemente formado por conjuntos de poblaciones, bien diferenciadas y probablemente aisladas a nivel específico: al norte del Rio Amazonas, en la región costera nororiental brasileña, en la costa dunosa al norte de Rio de Janeiro, y en la mencionada región de la cuenca del Paraná, en contacto con *T. etheridgei*.

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